1

"What numbers should replace the question marks?

100, 95, ?, 79, 68, 55, 40, 23"

(A)

88

(B)

82

(C)

72

(D)

73

Answer:(A)

2

"What comes next?

January

February

April

July

November

April

?????"

(A)

December

(B)

March

(C)

October

(D)

February

Answer:(C)

3

In the following questions, a series is given with one term missing. Choose the correct alternative from

the given ones that will complete the series. K,J,L,I,M,?

(A)

G

(B)

H

(C)

F

(D)

N

Answer:(B)

4

"Select the related word/letters/numbers from the given alternatives:

4 : 20 : : 8 : ?"

(A)

74

(B)

70

(C)

72

(D)

78

Answer:(C)

5

M is son of P, Q is the grand-daughter of O, who is the husband of P. How is M related to O?

(A)

Son

(B)

Daughter

(C)

Mother

(D)

Father

Answer:(A)

6

"If "A" means "subtraction", "B" means "division", "C" means "addition" and "D" means

"multiplication", then 305 B 5 A 28 C 43 D 12 = _____"

(A)

569

(B)

549

(C)

560

(D)

530

Answer:(B)

7

"Select the related word/number from the given alternatives:

CLOSE : DNRWJ : : OPEN : _____"

(A)

PRHR

(B)

PRJQ

(C)

RPJB

(D)

RZWR

Answer:(A)

8

Select the word which can be formed from the word IMMEDIATELY.

(A)

DIALECT

(B)

LIMITED

(C)

DIAMETER

(D)

DICTATE

Answer:(B)

9

Introducing a girl, Ankit says, "She is the sister of the son of my mother's sister". How is the girl related

to Ankit?

(A)

Niece

(B)

Daughter

(C)

Sister

(D)

Cousin

Answer:(D)

10

It was Sunday on jan 2, 2006, what was the day of the week Jan 1, 2010 ?

(A)

Sunday

(B)

Thursday

(C)

Friday

(D)

Saturday

Answer:(B)

11

Neha walks 30m towards south, then turning to her right she walks 30m, then turning to her left, she

walks 20m, again she turns to her left and walks 30m. How far is she from her initial position?

(A)

20 mtr

(B)

30 mtr

(C)

50 mtr

(D)

60 mtr

Answer:(C)

12

If in a code GONE is written as ILPB then how may CRIB be written in that code?

(A)

EUKY

(B)

EKUY

(C)

EYUK

(D)

EOKY

Answer:(D)

13

One morning, Ketan walked towards the sun. After some time he turned left and again to his left. Which

direction is he facing?

(A)

North

(B)

South

(C)

East

(D)

West

Answer:(D)

14

If India is coded as 27924 and cricket is coded as 1621835 then DIRT will be coded as _____ .

(A)

9878

(B)

9825

(C)

9165

(D)

9265

Answer:(D)

15

If 'Aman' = 4, 'Shivam' = 6, 'Science' = 7, Then 'Bhim' = ?

(A)

4

(B)

3

(C)

6

(D)

5

Answer:(A)

16

Which of the following countries has reduced UN contribution due to 'discrimination'?

(A)

Kuwait

(B)

 Pakistan

(C)

Israel

(D)

Iran

Answer:(C)

17

The Central Government issued instructions to link the mobile numbers of all existing mobile phone users

in the country with which form?

(A)

Voter Card

(B)

PAN card

(C)

Aadhaar Card

(D)

Answer:(C)

18

Which of the following commissions said that incitement to violence cannot be the only criterion for

deciding hate speech?

(A)

Finance Commission

(B)

Law Commission

(C)

Home Commission

(D)

None of these

Answer:(B)

19

Which of the following was appointed by the United Nations to run the World Food Program?

(A)

David Baisley

(B)

Billy Elias

(C)

Walter Neer

(D)

Andrew Leslie

Answer:(A)

20

Which British director of Indian origin was awarded the 2017 Sikh Ratna Award for his contribution to

British cinema?

(A)

Gurinder Chadha

(B)

Rahul Sachdeva

(C)

Rakesh Roshan

(D)

Ramesh Bhatt

Answer:(A)

21

Which state has recently received the 'Film Friendly State' award?

(A)

Tripura

(B)

Karnataka

(C)

Tamil Nadu

(D)

Madhya Pradesh

Answer:(D)

22

The government of which state has recently started the mission foundation for children to study?

(A)

Delhi

(B)

Haryana

(C)

Jharkhand

(D)

Madhya Pradesh

Answer:(A)

23

The government of which state has recently launched a water ATM policy for urban areas?

(A)

Rajasthan

(B)

Haryana

(C)

Gujarat

(D)

Maharashtra

Answer:(B)

24

Where was India's first air-conditioned rail ambulance service started?

(A)

Shimla

(B)

Mumbai

(C)

Chandigarh

(D)

Surat

Answer:(B)

25

Government of which country has recently decided to abolish reservation in government jobs?

(A)

Pakistan

(B)

Bangladesh

(C)

Sri Lanka

(D)

India

Answer:(B)

26

Which country has recently been renamed as 'The Kingdom of Iswatini'?

(A)

Kenya

(B)

Germany

(C)

Japan

(D)

Swaziland

Answer:(D)

27

Name the woman officer who was included in BSF as the first woman Combat Officer of India?

(A)

Devika Pathak

(B)

Tejaswini Ojha

(C)

Priyanka Gaikwad

(D)

Tanushree Pareek

Answer:(D)

28

Which actor was awarded the Kala Ratna Award by Vice President Hamid Ansari at Punjab University,

Chandigarh?

(A)

Anupam Kher

(B)

Ajay Devgan

(C)

Amitabh Bachchan

(D)

Salman Khan

Answer:(A)

29

Mars Orbiter Mission has made which of the following major discoveries in the upper atmosphere of the

red planet?

(A)

Superhot carbon

(B)

Superhot Argon

(C)

Superhot nitrogen

(D)

None of these

Answer:(B)

30

Which of the following telecom company launched Airtel Payment Bank on 12 January 2017?

(A)

Idea

(B)

Vodafone

(C)

Bharti Airtel

(D)

Reliance Jio

Answer:(C)

31

The ratio of pure gold to 18 carat gold is

(A)

0.6

(B)

0.75

(C)

0.8

(D)

0.9

Answer:(B)

32

Which of the following states has decided to give 4 percent reservation for backward Muslims?

(A)

Kerala

(B)

Uttar Pradesh

(C)

Andhra Pradesh

(D)

Karnataka

Answer:(C)

33

Where is "Paunar Ashram" established by Vinoba Bhave located?

(A)

Maharashtra

(B)

Rajasthan

(C)

Bihar

(D)

Gujarat

Answer:(A)

34

Where is "Sher Shah's Tomb" located?

(A)

Delhi

(B)

Ajmer

(C)

Lahore

(D)

Sasaram

Answer:(D)

35

Catalyst is a substance, which _____ chemical reaction.

(A)

Increases the speed of a

(B)

Decreases the speed of a

(C)

Can either increase or decrease the speed of a

(D)

Alters the value of equilibrium constant in a reversible

Answer:(A)

36

Higher free energy of activation of a chemical reaction (at a given temperature) implies

(A)

Slower rate of reaction

(B)

Higher rate of reaction

(C)

Higher equilibrium conversion

(D)

Answer:(A)

37

If the rate of a chemical reaction becomes slower at a given temperature, then the

(A)

Initial concentration of the reactants remains constant

(B)

Free energy of activation is lower

(C)

Entropy changes

(D)

Free energy of activation is higher

Answer:(D)

38

The eddy diffusivity for a liquid in plug flow must be

(A)

1

(B)

0

(C)

∞

(D)

Between 0 and 1

Answer:(B)

39

The most suitable reactor for carrying out an auto-thermal reaction is a

(A)

Batch reactor

(B)

CSTR

(C)

Semi-batch reactor

(D)

Plug-flow reactor

Answer:(B)

40

In an ideal tubular-flow reactor

(A)

There is no mixing in longitudinal direction

(B)

Mixing takes place in radial direction

(C)

There is a uniform velocity across the radius

(D)

All of the mentioned

Answer:(D)

41

A reactor is generally termed as an autoclave, when it is a

(A)

High pressure batch reactor

(B)

Atmospheric pressure tank reactor

(C)

High pressure tubular reactor

(D)

Atmospheric pressure CSTR

Answer:(A)

42

A batch reactor is suitable for

(A)

Achieving cent percent conversion of reactants into products

(B)

Large scale gaseous phase reactions

(C)

Liquid phase reactions

(D)

Obtaining uniform polymerisation products in highly exothermic reactions

Answer:(C)

43

If Thiele modulus is _____ , then the pore diffusion resistance in a catalyst may be considered as negligible.
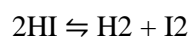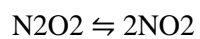
(A)

0

(B)

∞

(C)

< 0.5

(D)

> 0.5

Answer:(C)

44

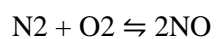Which of the following chemical reactions will be favoured by low pressure?

(A)

$2HI \leftrightharpoons H_2 + I_2$

(B)

$N_2O_2 \leftrightharpoons 2NO_2$

(C)

$N_2 + O_2 \leftrightharpoons 2NO$

(D)

None of these

Answer:(B)

45

A trickle bed reactor is the one, which

(A)

Has altogether three streams either entering or leaving

(B)

Processes three reactants at different flow rates

(C)

Processes three reactants with same flow rate

(D)

Employs all the three phases (i.e.. .solid, liquid and gas)

Answer:(D)

46

Fuel deposited in large quantity under the ocean sea-bed are present in the in the form of

(A)

Clathrate

(B)

Uranium

(C)

Thorium

(D)

Cellulose

Answer: a

47

Name one of the monomers used in production of epoxy resin

(A)

Caprolactam

(B)

Bisphenol-A

(C)

Terephthalic acid

(D)

Phosgene

Answer: b

48

For the manufacture of urea from ammonia and carbon dioxide

(A)

no catalyst is required

(B)

V2O5 is used as catalyst

(C)

silica - alumina mixture is used as catalyst

(D)

iron oxide promoted with K2O is used as catalyst

Answer: a

49

 65% oleum

(A)

is prepared by distilling 20% oleum

(B)

is prepared by chamber process

(C)

does not contain free SO3

(D)

contains 0.65% free SO3

Answer: a

50

Contact process for the manufacture of sulphuric acid yields

(A)

80% H2SO4 only

(B)

98% H2SO4 and higher

(C)

 95% H2SO4 only

(D)

90% H2SO4 only

Answer: b

51

For the production of sulphuric acid chamber process was developed first but produced acid of

concentration

(A)

less than 80%

(B)

0.98

(C)

1

(D)

 95%

Answer: a

52

Equilibrium constant (Kp) at constant pressure for sulphur dioxide oxidation

(A)

increases with increase in temperature

(B)

decreases with increase in temperature

(C)

remains unaffected with change in temperature

(D)

decreases linearly with increase in temperature

Answer: b

53

The equilibrium yield of sulphur trioxide obtained from the oxidation of sulphur dioxide can be increased

by

(A)

square root of system pressure at a given temperature

(B)

cube root of system pressure at a given temperature

(C)

square of system pressure at a given temperature

(D)

cube of system pressure at a given temperature

Answer: a

54

The most favourable conditions of temperature and pressure for the oxidation of sulphur dioxide to

sulphur trioxide are

(A)

low temperature high pressure

(B)

 low temperature low pressure

(C)

high temperature high pressure

(D)

high temperature low pressure

Answer: a

55

Poison for platinum catalyst is

(A)

sulphuric acid is formed in solution

(B)

phosphorous

(C)

arsenic

(D)

coke

Answer: c

56

In the manufacture of sulphuric acid by contact process platinum catalyst was previously used but suffers

from

(A)

easy poisoning

(B)

 fragility

(C)

 high initial investment

(D)

 all of these answers

Answer:(D)

57

A square matrix all of whose elements except the main diagonal are zeros is called a :

(A)

null matrix

(B)

singular matrix

(C)

diagonal matrix

(D)

symmetric matrix

Answer:(C)

58

Square matrix A for which AT = -A is called a :

(A)

row matrix

(B)

column matrix

(C)

symmetric matrix

(D)

skew-symmetric matrix

Answer:(D)

59

Square matrix A for which AT = A is called a :

(A)

row matrix

(B)

column matrix

(C)

symmetric matrix

(D)

skew-symmetric matrix

Answer:(D)

60

A square matrix A with complex entries for which $(A)T = -A$ is called :

(A)

identity matrix

(B)

hermitian matrix

(C)

symmetric matrix

(D)

Skew-symmetric matrix

Answer:(D)

61

Number of solutions to the equation $(1 - i)x = 2x$ is :

(A)

1

(B)

2

(C)

3

(D)

no solution

Answer:(A)

62

If , arg(z) < 0, then arg(-z) – arg(z) =

(A)

π

(B)

–π/4

(C)

–π/2

(D)

π/2

Answer:(A)

63

If ω is an imaginary cube root of unity, then $(1 + \omega - \omega2)7$ equals :

(A)

128 ω

(B)

128 ω2

(C)

-128 ω

(D)

-128 ω2

Answer:(D)

64

Value of ω1999 + ω299 + 1 is :

(A)

0

(B)

1

(C)

-1

(D)

2

65

The points with position vector 60i + 3j, 40i – 8j and ai –52j are collinear if :

(A)

a = -40

(B)

a = 40

(C)

a = 20

(D)

none of these

Answer:(A)

66

The value of k for which the points A(1, 0, 3) , B(-1, 3,4) ,C(1, 2, 1) and D(k, 2, 5) are coplanar is :

(A)

1

(B)

2

(C)

0

(D)

-1

Answer:(D)

67

The pair of lines whose direction cosines are given by the equations 3l+m+5n=0, 6mn-2nl+5lm=0 are :

(A)

parallel

(B)

perpendicular

(C)

inclined at cos-1 (1/6)

(D)

none of these

Answer:(C)

68

What is fluid mechanics?

(A)

Study of fluid behaviour at rest

(B)

Study of fluid behaviour in motion

(C)

Study of fluid behaviour at rest and in motion

(D)

Study of fluid behaviour at rest and in rest

Answer:(C)

69

Which of the following is the basic principle of fluid mechanics?

(A)

Momentum principle

(B)

Energy equation

(C)

Continuity equation

(D)

All of the mentioned

Answer:(D)

70

What is fluid mechanics used for?

(A)

Fluid mechanics enables to comprehend the behaviour of solid fluids under pressure

(B)

Fluid mechanics enables to comprehend the behaviour of fluids under a variety of forces & atmospheric

conditions

(C)

Fluid mechanics enables to comprehend the behaviour of fluids under various temperatures only

(D)

None of the mentioned

Answer:(C)

71

If a person studies about a fluid which is at rest, what will you call his domain of study?

(A)

Fluid Dynamics

(B)

Fluid Mechanics

(C)

Fluid Statics

(D)

Fluid Kinematics

Answer:(C)

72

Which among the following is the standard symbol for Atwood number?

(A)

Ar

(B)

 A

(C)

b

(D)

Ac

Answer:(B)

73

Which of the following method is used exclusively in fluid mechanics?

(A)

Eulerian method

(B)

Lagrangian method

(C)

Neither Lagrangian nor Eulerian method

(D)

Both Lagrangian and Eulerian methods

Answer:(A)

74

Which of the following method is most commonly used in fluid mechanics for analysis?

(A)

Eulerian Method

(B)

Control volume analysis

(C)

Langragian method

(D)

None of the mentioned

Answer:(A)

75

When is a fluid called turbulent?

(A)

High viscosity of fluid

(B)

Reynolds number is greater than 2000

(C)

Reynolds number is less than 2000

(D)

The density of the fluid is low

Answer:(C)

76

Which among the following is the standard symbol for Blake number?

(A)

ba

(B)

b

(C)

Bi

(D)

 Bl

Answer:(A)

77

Stagnation point is the point in fluid mechanics where the velocity of the fluid at that point is _____

(A)

unity

(B)

constant

(C)

 infinite

(D)

zero

Answer:(D)

78

Which among the following is the standard symbol for Archimedes number?

(A)

Ar

(B)

A

(C)

a

(D)

AR

Answer:(A)

79

Which among the following is referred to as the temperature at a stagnation point in the flow of fluids in

fluid mechanics and thermodynamics.

(A)

Absolute temperature

(B)

Maximum temperature

(C)

Stagnation temperature

(D)

Hydraulic temperature

Answer:(C)

80

Which of the following is having the lowest value of overall heat transfer coefficient?

(A)

Feed water heaters

(B)

Air condensers

(C)

Air to low viscosity liquids

(D)

Steam condensers

Answer:(C)

81

A cross-flow type air heater has an area of 50 cm^2. The overall heat transfer coefficient is 100 W/m^2 K

and the heat capacity of both hot and cold streams is 1000 W/m K. The value of NTU is

(A)

0.2

(B)

6

(C)

1000

(D)

5

Answer:(D)

82

An oil cooler in a high-performance engine has an outside surface area 0.12 m² and a surface temperature

of 65 degree Celsius. At any intermediate time air moves over the surface of the cooler at a temperature of

30 degree Celsius and gives rise to a surface coefficient equal to 45.4 W/ m ^{2} K. Find out the heat transfer

rate?

(A)

564.98 W

(B)

324.67 W

(C)

190.68 W

(D)

768.43 W

Answer:(C)

83

Which of the following statement is incorrect according to heat transfer?

(A)

Heat flow doesn't depend on temperature

(B)

A material medium is not necessary for heat transmission

(C)

The process of heat transfer is an irreversible process

(D)

For heat exchange, a temperature gradient must exist

Answer:(A)

84

Consider a convective heat flow to water at 75 degree Celsius from a cylindrical nuclear reactor fuel rod

of 50 mm diameter. The rate of heat generation is 50000000 W/m^3 and convective heat transfer

coefficient is I kW/m^2 K. The outer surface temperature of the fuel element would be

(A)

400 degree Celsius

(B)

625 degree Celsius

(C)

700 degree Celsius

(D)

550 degree Celsius

Answer:(C)

85

For a cylindrical rod with uniformly distributed heat sources, the thermal gradient at half the radius

location will be

(A)

One half

(B)

One fourth

(C)

Four times

(D)

Twice

Answer:(A)

86

Water (specific heat = 4 k J/kg K) enters a cross flow exchanger (both fluids unmixed) at 15 degree

Celsius and flows at the rate of 7.5 kg/s. It cools air (C P = 1 k J/kg K) flowing at the rate of 10 kg/s from

an inlet temperature of 120 degree Celsius. For an overall heat transfer coefficient of 780 k J/m^2 hr degree

and the surface area is 240 m^2, determine the NTU

(A)

1.2

(B)

8.2

(C)

6.2

(D)

5.2

Answer:(D)

87

A heat exchanger to preheat oil for a furnace was designed without considering the possibility of scale

formation, and the overall heat transfer coefficient based on the fuel oil side was 3200 k J/m^2 hr degree.

What would be the corrected coefficient of heat transfer if a fouling factor of 0.00025 m^2 hr degree/k J for

the fuel oil is taken into account?

(A)

1222.78 k J/m^2 hr degree

(B)

1555.78 k J/m^2 hr degree

(C)

1777.78 k J/m^2 hr degree

(D)

1233.78 k J/m^2 hr degree

Answer:(C)

88

Which of the following is the value of fouling factor for engine exhaust?

(A)

0.001 m^2 K/W

(B)

0.002 m^2 K/W

(C)

0.003 m^2 K/W

(D)

0.004 m^2 K/W

Answer:(B)

89

The value of fouling factor for industrial liquids is _____

(A)

0.0002 m² K/W

(B)

0.0001 m² K/W

(C)

0.0003 m² K/W

(D)

0.0004 m² K/W

Answer:(A)

90

Which of the following is the value of overall heat transfer coefficient for steam condensers?

(A)

2000-9500 W/m² K

(B)

1500-5000 W/m² K

(C)

200-9000 W/m² K

(D)

3000-5500 W/m² K

Answer:(B)

91

Phase lag of the frequency response of a second order system to a sinusoidal forcing function

(A)

Is 30°

(B)

Is 90° at the most

(C)

Approaches 180° asymptotically

(D)

Is 120°

Answer:(C)

92

Which of the following is not classified as a thermo electric pyrometer?

(A)

Resistance thermometer

(B)

Thermocouple

(C)

Optical pyrometer (disappearing filament type)

(D)

Radiation pyrometer

Answer:(C)

93

The temperature of tempering oil baths maintained at 400°C during heat treatment of steel is measured by

a/an _____ thermocouple.

(A)

Chromel-alumel

(B)

Iron-constantan

(C)

Platinum-platinum/rhodium

(D)

None of these

Answer:(B)

94

_____ are analysed using a polarograph.

(A)

Isotonic solutions

(B)

Solids

(C)

Liquids

(D)

Gases

Answer:(B)

95

_____ temperature scale assigns 0° to the 'ice point' and 80° to the 'steam point'.

(A)

Celcius

(B)

Rankine

(C)

Reumur

(D)

Farenhite

Answer:(C)

96

Nickel percentage in invar which is an iron-nickel alloy, and is used as a thermocouple material is

(A)

12

(B)

36

(C)

54

(D)

68

Answer:(B)

97

Operating range of a temperature measuring instrument is 800 to 1600°C. It could be a/an _____

pyrometer.

(A)

Radiation

(B)

Optical

(C)

Photoelectric

(D)

None of these

Answer:(C)

98

Flow rate measurement of hostile acids and alkalis can be most suitably done by a/an

(A)

Venturimeter

(B)

Orificemeter

(C)

Magnetic flow meter

(D)

Hot wire anemometer

Answer:(C)

99

Response of a linear control system for a change in set point is called

(A)

Frequency response

(B)

Transient response

(C)

Servo problem

(D)

Regulator problem

Answer:(C)

100

Compositional analysis of _____ is done using mass spectrometer.

(A)

An isotope

(B)

Natural gas

(C)

A solid

(D)

An alloy

Answer:(A)

101

Very low pressure is expressed in microns(μ), which is equal to _____ mm of Hg column

(absolute) at 0°C.

(A)

0.0001

(B)

0.001

(C)

0.01

(D)

0.1

Answer:(B)

102

Mass transfer rate between two fluid phases does not necessarily depend on the _____ of the two

phases.

(A)

Chemical properties

(B)

Physical properties

(C)

Degree of turbulence

(D)

Interfacial area

Answer:(A)

103

For ethanol-water system, the lowering of distillate quality from 95% to 92% will cause _____

plate requirement.

(A)

No change in theoretical

(B)

Marginal decrease in the number of

(C)

Major decrease in the number of

(D)

None of these

Answer:(B)

104

The mass diffusivity, the thermal diffusivity and the eddy momentum diffusivity are same for, NPr = NSc

= _____

(A)

1

(B)

0.5

(C)

10

(D)

0

Answer:(A)

105

The interfacial area per unit volume of dispersion, in a gas-liquid contactor, for fractional hold up of gas =

0.1 and gas bubble diameter = 0.5 mm is given by (in m²/m³)

(A)

500

(B)

1200

(C)

900

(D)

800

Answer:(A)

106

The ratio of Murphree plate efficiency to point efficiency is 1 in a _____ flow model.

(A)

Plug

(B)

Perfectly mixed

(C)

dilute

(D)

None

Answer:(B)

107

Which of the following binary systems is an example of a maximum boiling azeotrope?

(A)

Water-hydrochloric acid

(B)

Acetone-carbon disulphide

(C)

Water-ethyl alcohol

(D)

N-heptane-n-octane

Answer:(A)

108

Capacity of a rotary dryer depends on its

(A)

R.p.m

(B)

Inclination with ground surface

(C)

R.p.m & Inclination with ground surface

(D)

None

Answer:(C)

109

In a liquid-liquid extraction, 10 kg of a solution containing 2 kg of solute C and 8 kg of solvent A is

brought into contact with 10 kg of solvent B. Solvent A and B are completely immiscible in each other

whereas solute C is soluble in both the solvents. The extraction process attains equilibrium. The

equilibrium relationship between the two phases is Y* = 0.9X, where Y* is the kg of C/kg of B and X is kg of C/kg of A. Choose the correct answer.

(A)

The entire amount of C is transferred to solvent B

(B)

Less than 2 kg but more than 1 kg of C is transferred to solvent B

(C)

Less than 1 kg of C is transferred to B

(D)

No amount of C is 69ransferred to B

Answer:(A)

110

Removal of _____ exemplifies an adsorption unit operation.

(A)

Uranium from its ore

(B)

Water from petrol

(C)

Ammonia from coke oven gas

(D)

Mustard oil from mustard seed

Answer:(B)

111

Pick out the wrong statement pertaining to the analogy between equations of heat and mass transfer operations.

(A)

Sherwood number in mass transfer is analogous to Nusselt number in heat transfer

(B)

Prandtl number in heat transfer is analogous to Schmidt number in mass transfer

(C)

Reynolds number in mass transfer is analogous to Grashoff number in heat transfer

(D)

Reynolds number remains the same in both heat and mass transfer

Answer:(C)

112

Co-current absorbers are usually used when the gas to be dissolved in the liquid is

(A)

Sparingly soluble

(B)

Highly soluble

(C)

A pure substance

(D)

A mixture

Answer:(C)

113

In most of the shell and tube heat exchangers, the tube pitch is generally _____ the tube diameter.

(A)

Less than

(B)

1.25-1.50 times

(C)

2.5 times

(D)

One-fourth of

Answer:(B)

114

Value of Peclet number = 0, is the representative of

(A)

Laminar flow

(B)

Complete back mixing

(C)

Plug flow

(D)

Eddy diffusivity = 0

Answer:(B)

115

The ideal size of round bubble caps to be used in industrial distillation column having a diameter of

3-6 metres is _____ cms.

(A)

5

(B)

15

(C)

7.5

(D)

50

Answer:(B)

116

Pick out the wrong statement pertaining to the design of a horizontal tube evaporator.

(A)

It is unsuitable for concentrating those liquids, which form a scale or deposit salt

(B)

It is suitable for process, in which the final product is a liquor instead of solid

(C)

Its usual dimensions are: tube dia = 2-3 cms; evaporator body dia = 1-4 metres and evaporator height =

2.5-4 metres

(D)

Liquor flows inside the tube, while the steam is outside submerging the tube

Answer:(D)

117

Pick out the wrong statement pertaining to the design of the bubble cap tray of a distillation column to give stable operation and even vapour distribution.

(A)

The pressure drop due to the caps & slots and the static submergence should be as high as practicable for reasonable operation

(B)

Tendency towards stable operation is increased by increasing the skirt clearance of the caps, lowering the rate of liquid flow per unit plate width or increasing the spacing between the caps

(C)

The dimensionless ratio of liquid gradient to pressure drop head caused by the bubble cap assembly should be less than 0.4

(D)

None of these

Answer:(D)

118

A certain pressure vessel manufacturer avoids doing reinforcements calculations for openings by always

providing a reinforcing pad extending upto double the diameter of the opening and of the same material

and thickness as that of the shell wall. If area compensation is accepted as a code guideline, his approach

leads to safe design

(A)

Only if the opening is on spherical vessel

(B)

Only if the opening is on a vertical cylindrical vessel

(C)

Only if the opening is on a horizontal cylindrical vessel

(D)

Irrespective of the shape of the vessel

Answer:(D)

119

_____ heat exchanger is also known as 'hair pin type' exchanger,

(A)

Double pipe

(B)

Finned

(C)

Plate type

(D)

Regenerative

Answer:(A)

120

_____ head is the most economical for cylindrical vessels designed for operating at high pressure

(> 15 atm.).

(A)

Hemispherical

(B)

Dished

(C)

Ellipsoidal

(D)

Conical

Answer:(C)

121

Hazards associated with the relief valve leakage for extremely hazardous material storage can be taken

care of by providing

(A)

Rupture diaphragm

(B)

Dikes

(C)

Surge chamber

(D)

None of these

Answer:(A)

122

In a shell and tube heat exchanger, the shortest centre to centre distance between the adjacent tubes is

(A)

Called tube pitch

(B)

Called tube clearance

(C)

Always less than the diameter of the tube

(D)

None of these

Answer:(A)

123

The ratio of the largest load in a test to the original cross-sectional area of the test specimen is called the

_____ stress.

(A)

Yield point

(B)

Breaking

(C)

Ultimate

(D)

None of these

Answer:(C)

124

In which of the following systems does mass transfer occur across the system boundary?

(A)

isolated system

(B)

closed system

(C)

open system

(D)

none of the mentioned

Answer:(C)

125

When more than one fluid stream enters or leaves the control volume, which of the following type of

balance is taken?

(A)

mass balance

(B)

energy balance

(C)

mass balance and energy balance

(D)

none of the mentioned

Answer:(C)

126

Fluid flow through which of the following throttles the flow?

(A)

partially opened valve

(B)

orifice

(C)

porous plug

(D)

all of the mentioned

Answer:(D)

127

Rate of energy increase within the control volume is given by

(A)

rate of energy inflow * rate of energy outflow

(B)

rate of energy inflow / rate of energy outflow

(C)

rate of energy inflow-rate of energy outflow

(D)

rate of energy inflow + rate of energy outflow

Answer:(B)

128

Which of the following is true for a discharging tank?

(A)

the process is quasi-static

(B)

the process is adiabatic

(C)

Dq=0

(D)

all of the mentioned

Answer:(D)

129

A cylinder/piston contains 1kg methane gas at 100 kPa, 20°C. The gas is compressed reversibly to a

pressure of 800 kPa. What is the work required if the process is isothermal?

(A)

-116.0 kJ

(B)

-316.0 kJ

(C)

-216.0 kJ

(D)

-416.0 kJ

Answer:(B)

130

A piston/cylinder contains carbon dioxide at 300 kPa, 100°C with a volume of 0.2 m^3. Weights are

added at such a rate that the gas compresses according to the relation PV^1.2 = constant to a final

temperature of 200°C. Find the work done during the process.

(A)

60.4 kJ

(B)

-50.4 kJ

(C)

80.4 kJ

(D)

-80.4 kJ

Answer:(D)

131

Which of the following statements are true for a mechanical energy reservoir(MER)?

(A)

all processes within an MER are quasi-static

(B)

it is a large body enclosed by an adiabatic impermeable wall

(C)

stores work as KE or PE

(D)

all of the mentioned

Answer:(D)

132

Which of the following is true according to Clausius statement?

(A)

it is possible to construct a device that can transfer heat from a cooler body to a hotter body without any

effect

(B)

it is impossible to construct a device that can transfer heat from a cooler body to a hotter body without

any effect

(C)

it is impossible to construct a device that can transfer heat from a hotter body to a cooler body without

any effect

(D)

none of the mentioned

Answer:(B)

133

What is the relationship between Kelvin-Planck's and Clausius' statements?

(A)

violation of one doesn't violate the other

(B)

not connected to each other

(C)

virtually two parallel statements of the second law

(D)

none of the mentioned

Answer:(C)

134

Which of the following causes irreversibility?

(A)

electrical resistance, magnetic hysteresis

(B)

friction, viscosity

(C)

lubrication

(D)

inelasticity

Answer:(D)

135.

Fill in the blanks

Our country is spiritual country, theirs................ religious.

A.

is

B.

are

C.

also

D.

have

Answer:(A)

136.

Fill in the blanks

Our sir teaches Mathematics.................... English.

A.

across

B.

besides

C.

beside

D.

both

Answer:(B)

137.

Fill in the blanks

Please, come.................... the bathroom.

A.

out of

B.

over

C.

on

D.

in

Answer:(A)

138.

Fill in the blanks

Please, don't laugh … those beggars.

A.

for

B.

on

C.

at

D.

against

Answer:(C)

139.

Fill in the blanks

Please, stop.............. so many mistakes.

A.

to make

B.

make

C.

making

D.

makes

Answer:(C)

140.

Fill in the blanks

She____her husband for 15 minutes.

A.

is beating

B.

has been beating

C.

has been beaten

D.

beats

Answer:(B)

141.

Choose the correct synonym of the given word:

Augury

(A)

Altar

(B)

Omen

(C)

Dispute

(D)

Place of refuge

Answer:(B)

142.

Fill in the blanks

The rain comes.................... the clouds.

A.

in

B.

near

C.

from

D.

under

Answer:(C)

143.

Fill in the blanks

The ship.................. , Robinson arrived on the Island.

A.

had been broken

B.

having been broken

C.

having broken

D.

has broken

Answer:(C)

144.

Fill in the blanks

The stars.................. counted.

A.

can

B.

can be

C.

cannot be

D.

must

Answer:(C)

145.

Fill in the blanks

Three Idiots............... really a watchable movie.

A.

are

B.

is

C.

super

D.

do

Answer:(B)

146.

Choose the correct spelling.

A.

Intillect

B.

Intelact

C.

Intelect

D.

Intellect

Answer:(D)

147.

Fill in the blanks

Chirag hardly ever cooks,…................. ?

A.

isn't he

B.

he doesn't

C.

doesn't he

D.

does he

Answer:(D)

148.

Fill in the blanks

I don't know the city …..he lives.

A.

what

B.

where

C.

when

D.

which

Answer:(B)

149.

Choose the appropriate option that correctly completes the sentence. He always stammers in public

meetings, but his today's speech……..

A.

was fairly audible to everyone.

B.

was not liked by the audience.

C.

was not received by the audience.

D.

was surprisingly fluent.

Answer:(D)

Choose the correct synonym of the given word:

Apex

(A)

Banner

(B)

Top

(C)

Category

(D)

Inborn

Answer:(B)